

# Pressure Testing Procedures for Pipelines

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*Approved By* [REDACTED]

*McMurdo, Palmer, and South Pole Stations*

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*Active Divisions/Departments*

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## **Purpose**

This procedure outlines the necessary actions and safety practices for pressure testing all new fuel line piping and other piping air tests at McMurdo, Palmer, and South Pole Stations.

## **Responsibility**

**Plumbing Foreman and Project Engineer, FEMC**

### **Personnel**

Plumbing Work Center Foreman, Pipefitters, FEMC Construction  
Coordinator, Project Engineer, NSF Station Manager

## **Discussion**

In order to ensure the integrity of pipeline in and around all Stations, RPSC will perform pressure testing. Due to the freezing risks associated with pressure testing with water and the environmental hazards of hydrotesting with fuel, RPSC uses pneumatic (air) testing. The pressure testing procedures adopted by RPSC follow API and ASME recommended standards and practices. The procedures also outline proper safety practices that must be followed in order to minimize risks.

## Requirements

### Tools and Equipment

- All personnel within test area shall be required to wear eye and hearing Personnel Protection Equipment (PPE).
- Chicago quick couplings and an air compressor (currently using Sul-Air Type compressor, exact equipment type may vary).

## Ensuring Safety of Work Site

Pneumatic testing can be dangerous and should be performed with caution and careful attention to all safety procedures. To ensure the safety of all workers and residents, the following safety precautions must be completed prior to conducting the pressure testing:

1. Notify station personnel of area to be avoided due to risks during pressure testing.
2. Ensure that no high pressure testing occur in the work centers.
3. Ensure personnel conducting the test stand behind a barrier during pressurization.
4. Mark off the area as a dangerous site.

This information should be provided if the test occurs in town or near a high traffic area. Pedestrians must be advised to avoid the area.

**Results** After following the above procedures, the necessary steps to ensure safety will be complete.

## Conducting the Pressure Test

To conduct a pressure test of pipelines in or around all Stations, complete the following steps:

1. Identify the maximum test pressure to be used, as determined by the Project Engineer.
2. Identify the steel pipe to be tested.  
When possible, the recommended maximum test length is 400 feet.
3. Examine all connections prior to the test to ensure proper tightness.
4. Determine the pressure rating for all connected fittings and devices to ensure they are rated for the maximum test pressure.
5. Place a 150# blind flange or other suitable cover on all openings that are not closed off by valves.
6. Plug all test, drain, and vent ports that are not required for the test.
7. If the section of pipe being tested is isolated from other sections by in-line valves, ensure the portion not being tested is open to the atmosphere.
8. Apply a preliminary test pressure of 25 psi, or as directed by the Project Engineer.

**Note** This pressure should be held for a minimum of 10 minutes to allow for the location of any major leaks. If leaks are detected during this step, or at any time during the test, relieve the pressure and consult the Project Engineer for instruction.

9. Apply the test pressure in increments of 25 psi, or as directed by the Project Engineer, until the maximum test pressure is reached. Hold pressure for 5 minutes at each 25-psi increment before adding more pressure.

**Note** The maximum test pressure (rule of 150%) of the maximum system operating hydrostatic pressure on the fuel distribution system, this pressure should be verified by the Project Engineer prior to testing.

10. Hold the maximum test pressure for 10 minutes.

The NSF Station Manager or other appropriate NSF representative must observe this step.

11. After the required 10 minutes, reduce the pressure to 100 psi or predetermined pressure.
12. Hold this pressure for 24 hours.
13. Obtain confirmation of a successful test by the NSF representative after the 24 hour time period.
14. Remove the pressure, with caution to avoid escaping air stream, debris, and high decibel noise level.
15. Complete the appropriate following forms *Pressure/Leak Testing Sheet* (EN-MPS-706a) and/or the *Pressure and Temperature Log* (EN-MPS-706b) and place them in the appropriate engineering files as specified by the Project Engineer.

**Results** After completing these steps, pressure testing is completed. Once the test is successfully completed, then the line is ready for service.

## References

ASME b31.1, 137.5 – American National Standard for Pressure Piping; API Recommended Practice 1110 – *Pressure Testing of Liquid Petroleum Pipelines*  
*Pressure/Leak Testing Sheet* (EN-MPS-706a)  
*Pressure and Temperature Log* (EN-MPS-706b)

## Records

See the “Pressure/Leak Testing Sheet and the Pressure and Temperature Log,” under the FEMC-MPS tab of the *FEMC Records Management Table* (EN-D-226a).

(All forms are located on Common drive I:/Perm/Procedures/Master List/FEMC forms)